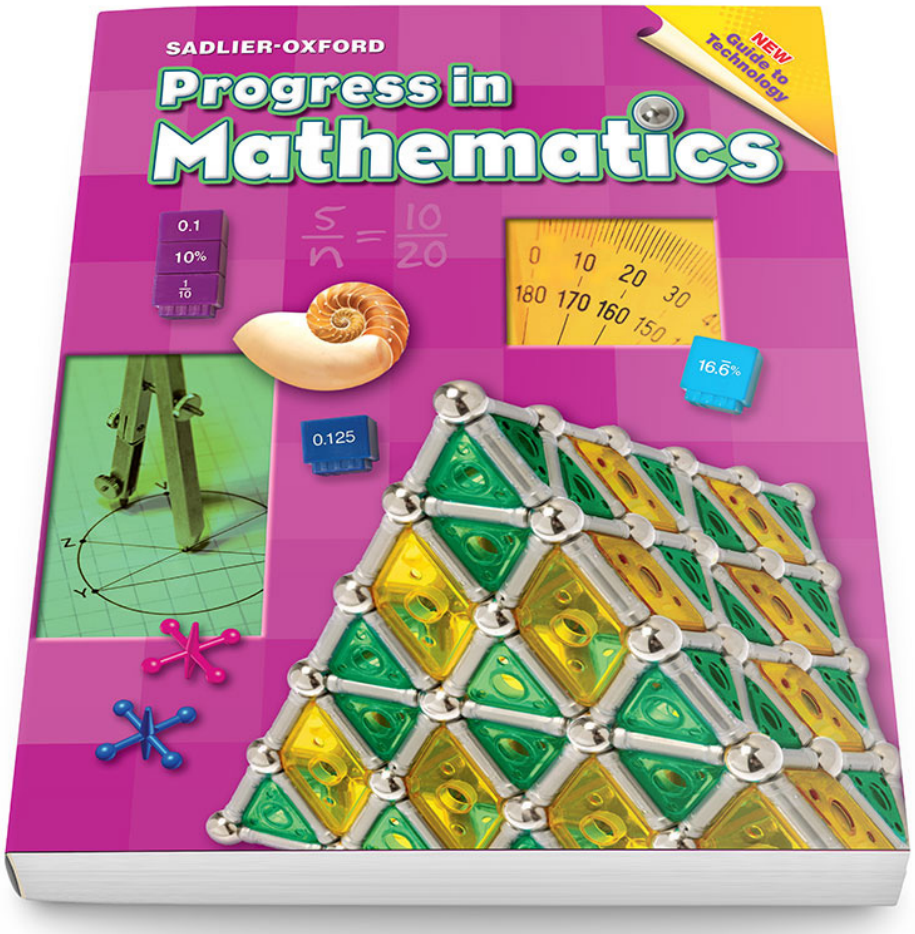
Progress in Mathematics

Correlation to the New York State
Next Generation Mathematics Learning Standards (2017)

Grade 6



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NY-6.RP RATIO AND PROPORTIONAL REASONING

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
Understand ratio concepts and use ratio reasoning to solve problems.	
NY-6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. e.g., "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received three votes."	**Chapter 11 Ratio, Proportion, and Percent** 11-1 Ratio—pp. 376–377
NY-6.RP.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$ (b not equal to zero), and use rate language in the context of a ratio relationship. e.g., "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there are ¾ cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." Note: Expectations for unit rates in this grade are limited to non-complex fractions.	**Chapter 11 Ratio, Proportion, and Percent** *11-2B Ratios and Unit Rates—Online 11-3 Rates (unit rate, unit price)—pp. 380–381
NY-6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems. Note: Strategies may include but are not limited to the following: tables of equivalent ratios, tape diagrams, double number lines, and equations.	
NY-6.RP.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	**Chapter 11 Ratio, Proportion, and Percent** *11-2A Ratio and Rate Tables—Online *11-3A Compare Ratios (use tables to compare ratios)—Online **Chapter 14 More Concepts in Algebra** *14-7A Model Rates—Online

NY-6.RP RATIO AND PROPORTIONAL REASONING

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
NY-6.RP.3b Solve unit rate problems. e.g., If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? What is the unit rate? Note: Problems may include unit pricing and constant speed.	**Chapter 11 Ratio, Proportion, and Percent** 11-3 Rates (unit rate, unit price)—pp. 380–381 11-4 Proportions—pp. 382–383 *11-4A Model Proportions with Double Number Lines—Online *11-4B Model Proportions with Tape Diagrams—Online 11-5 Solve Proportions—pp. 384–385 11-6 Write Proportions—pp. 386–387 11-7 Proportions and Similar Figures—pp. 388–389 11-8 Use Proportions—pp. 390–391 **Chapter 12 Percent Applications** 12-9 Better Buy—pp. 430–431
NY-6.RP.3c Find a percent of a quantity as a rate per 100. Solve problems that involve finding the whole given a part and the percent, and finding a part of a whole given the percent. e.g., 30% of a quantity means $\frac{30}{100}$ times the quantity.	**Chapter 12 Percent Applications** 12-1 Mental Math: Percent—pp. 414–415 12-3 Percentage of a Number—pp. 418–419 12-4 Find the Rate—pp. 420–421 12-5 Find the Original Number—pp. 422–423 12-6 Percent Problems—pp. 424–425 12-13 Problem Solving Strategy: Write an Equation (find sales tax)—pp. 438–439
NY-6.RP.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. Note: Conversion of units occur within a given measurement system, not across different measurement systems.	**Chapter 13 Measurement** 13-1 Measure Metric Length—pp. 448–449 13-2 Measure Metric Capacity and Mass—pp. 450–451 13-3 Measure Customary Length—pp. 452–453 13-4 Measure Customary Capacity and Weight—pp. 454–455 13-5 Compute Customary Units—pp. 456–457 13-7 Relate Customary and Metric Units—pp. 460–461 *13-7A Use Proportions to Convert Units—Online

NY-6.NS THE NUMBER SYSTEM

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	
NY-6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions. Note: Strategies may include but are not limited to the following: using visual fraction models, a standard algorithm, and equations to represent the problem. e.g., Create a story context for $(\frac{2}{3}) \div (\frac{3}{4})$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}$ because $\frac{3}{4}$ of $\frac{8}{9}$ is $\frac{2}{3}$. In general, $(\frac{a}{b}) \div (\frac{c}{d}) = \frac{ad}{bc}$. e.g., • How much chocolate will each person get if 3 people share $\frac{1}{2}$ lb of chocolate equally? • How many $\frac{3}{4}$ cup servings are in $\frac{2}{3}$ of a cup of yogurt? • How wide is a rectangular strip of land with length $\frac{3}{4}$ mi and area $\frac{1}{2}$ square mi?	**Chapter 8 Fractions: Multiplication, Division, and Probability** 8-5 Meaning of Division—pp. 258–259 *8-5A Dividing with Fractions—Online 8-6 Divide Fractions by Fractions—pp. 260–261 8-8 Divide with Whole and Mixed Numbers—pp. 264–265
Compute fluently with multi-digit numbers and find common factors and multiples.	
NY-6.NS.2 Fluently divide multi-digit numbers using a standard algorithm.	**Skills Update** Divide Whole Numbers—p. 11 **Chapter 3 Division: Whole Numbers and Decimals** 3-1 Short Division—pp. 88–89 3-3 Divide Whole Numbers—pp. 92–93
NY-6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation.	**Skills Update** Add Whole Numbers and Decimals—p. 5 Subtract Whole Numbers and Decimals—p. 6 **Chapter 1 Number Sense, Addition, and Subtraction** 1-7 Addition of Whole Numbers and Decimals—pp. 46–47

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NY-6.NS THE NUMBER SYSTEM

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
	1-8 Subtraction of Whole Numbers and Decimals—pp. 48–49 1-9 Addition and Subtraction of Decimals—pp. 50–51 **Chapter 2 Multiplication: Whole Numbers and Decimals** 2-1 Multiplication Patterns—pp. 66–67 2-4 Multiply with Decimals—pp. 72–73 **Chapter 3 Division: Whole Numbers and Decimals** 3-4 Divide Decimals by 10, 100, and 1,000—pp. 94–95 3-5 Divide Decimals by Whole Numbers—pp. 96–97 3-6 Patterns with Tenths, Hundredths, and Thousandths—pp. 98–99 3-8 Decimal Divisors—pp. 102–103 3-9 Zeros in Division—pp. 104–105
NY-6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor other than 1. Find the least common multiple of two whole numbers less than or equal to 12. e.g., Express 36 + 8 as 4 (9 + 2).	**Skills Update** Factors, Multiples, and Divisibility—p. 3 **Chapter 6 Number Theory and Fractions** 6-2 Prime and Composite Numbers—pp. 180–181 6-3 Prime Factorization—pp. 182–183 6-4 Equivalent Fractions—pp. 184–185 6-5 Greatest Common Factor—pp. 186–187 *6-5A The Distributive Property and Common Factors—Online 6-6 Fractions in Simplest Form—pp. 188–189 6-9 Least Common Multiple—pp. 194–195
Apply and extend previous understandings of numbers to the system of rational numbers.	
NY-6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. *continued*	**Chapter 5 Integers** 5-1 Integers—pp. 150–151 *5-1A Integers in the Real World—Online 5-2 Compare and Order Integers—pp. 152–153

NY-6.NS THE NUMBER SYSTEM

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
e.g., temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge.	
NY-6.NS.6 Understand a rational number as a point on the number line. Use number lines and coordinate axes to represent points on a number line and in the coordinate plane with negative number coordinates.	
NY-6.NS.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line. Recognize that the opposite of the opposite of a number is the number itself, and that 0 is its own opposite. e.g., With the number 3, – (–3) = 3	**Chapter 5 Integers** 5-1 Integers—pp. 150–151 5-2 Compare and Order Integers—pp. 152–153
NY-6.NS.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	**Chapter 14 More Concepts in Algebra** 14-5 Graph Ordered Pairs—pp. 504–505 14-6 Graph Reflections and Translations—pp. 506–507
NY-6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line. Find and position pairs of integers and other rational numbers on a coordinate plane.	**Chapter 5 Integers** 5-1 Integers—pp. 150–151 *5-1A Integers in the Real World—Online 5-2 Compare and Order Integers—pp. 152–153 **Chapter 6 Number Theory and Fractions** 6-8 Fraction Sense—pp. 192–193 6-10 Compare Fractions—pp. 196–197 6-11 Order Fractions—pp. 198–199 6-12 Relate Fractions to Decimals—pp. 200–201 6-14 Rename Decimals as Fractions—pp. 204–205 6-16 Rational Numbers—pp. 208–209 6-17 Compare and Order Rational Numbers—pp. 210–211 **Chapter 14 More Concepts in Algebra** 14-5 Graph Ordered Pairs—pp. 504–505

NY-6.NS THE NUMBER SYSTEM

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
NY-6.NS.7 Understand ordering and absolute value of rational numbers.	
NY-6.NS.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line. e.g., Interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.	**Chapter 5 Integers** 5-2 Compare and Order Integers—pp. 152–153 **Chapter 6 Number Theory and Fractions** 6-10 Compare Fractions—pp. 196–197 6-11 Order Fractions—pp. 198–199 6-12 Relate Fractions to Decimals—pp. 200–201 6-16 Rational Numbers—pp. 208–209 6-17 Compare and Order Rational Numbers—pp. 210–211
NY-6.NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. e.g., Write –3°C > –7°C to express the fact that –3°C is warmer than –7°C.	**Chapter 5 Integers** 5-1 Integers—pp. 150–151 5-2 Compare and Order Integers—pp. 152–153 *5-2A Use Reasoning to Compare and Order Rational Numbers—Online 5-9 Temperature—pp. 166–167 **Chapter 6 Number Theory and Fractions** 6-10 Compare Fractions—pp. 196–197 6-11 Order Fractions—pp. 198–199 6-17 Compare and Order Rational Numbers—pp. 210–211
NY-6.NS.7c Understand the absolute value of a rational number as its distance from 0 on the number line. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. e.g., For an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.	**Chapter 5 Integers** 5-1 Integers (absolute value)—pp. 150–151 5-2 Compare and Order Integers—pp. 152–153 *5-2A Use Reasoning to Compare and Order Rational Numbers—Online 5-5 Multiply Integers—pp. 158–159 5-10 Problem Solving Strategy: Make a Table—pp. 168–169
NY-6.NS.7d Distinguish comparisons of absolute value from statements about order. e.g., Someone with a balance of $100 in their bank account has more money than someone with a balance of –$1000, because 100 > –1000. But, the second person's debt balance is much greater than the first person's credit balance because |–1000| > |100|.	**Chapter 5 Integers** 5-2 Compare and Order Integers—pp. 152–153 *5-2A Use Reasoning to Compare and Order Rational Numbers—Online 5-10 Problem Solving Strategy: Make a Table—pp. 168–169

NY-6.NS THE NUMBER SYSTEM

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
NY-6.NS.8 Solve real-world and mathematical problems by graphing points on a coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	**Chapter 5 Integers** 5-1 Integers (absolute value)—pp. 150–151 **Chapter 14 More Concepts in Algebra** 14-5 Graph Ordered Pairs—pp. 504–505 *14-5A Distances and the Coordinate Plane—Online *14-5B Graphing Polygons—Online 14-10 Problem Solving Strategy: Use More Than One Strategy—pp. 514–515

NY-6.EE EQUATIONS AND EXPRESSIONS (INEQUALITIES)

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
Apply and extend previous understandings of arithmetic to algebraic expressions.	
NY-6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.	**Chapter 1 Number Sense, Addition, and Subtraction** 1-3 Place Value and Exponents—pp. 38–39 **Chapter 2 Multiplication: Whole Numbers and Decimals** 2-5 Exponents—pp. 74–75 **Chapter 4 Expressions and Equations** 4-1 Order of Operations—pp. 122–123 *4-2A Expressions Involving Exponents—Online 4-3 Evaluate Algebraic Expressions—pp. 126–127 **Chapter 8 Fractions: Multiplication, Division, and Probability** 8-9 Order of Operations with Fractions—pp. 266–267
NY-6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.	
NY-6.EE.2a Write expressions that record operations with numbers and with letters standing for numbers. e.g., Express the calculation "Subtract *y* from 5" as 5 – *y*.	**Chapter 1 Number Sense, Addition, and Subtraction** 1-10 Addition and Subtraction Expressions—pp. 52–53

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NY-6.EE EQUATIONS AND EXPRESSIONS (INEQUALITIES)

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
	Chapter 3 Division: Whole Numbers and Decimals 3-10 Multiplication and Division Expressions—pp. 106–107 **Chapter 4 Expressions and Equations** 4-2 Translate Expressions—pp. 124–125 4-8 Use Formulas—pp. 136–137
NY-6.EE.2b Identify parts of an expression using mathematical terms (term, coefficient, sum, difference, product, factor, and quotient); view one or more parts of an expression as a single entity. e.g., Describe the expression 2(8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.	**Chapter 1 Number Sense, Addition, and Subtraction** 1-10 Addition and Subtraction Expressions—pp. 52–53 **Chapter 3 Division: Whole Numbers and Decimals** 3-10 Multiplication and Division Expressions—pp. 106–107 **Chapter 4 Expressions and Equations** *4-1A Expressions—Online 4-2 Translate Expressions—pp. 124–125
NY-6.EE.2c Evaluate expressions given specific values for their variables. Include expressions that arise from formulas in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order (Order of Operations). e.g., Use the formulas $V = s^3$ and $SA = 6s^2$ to find the volume and surface area of a cube with sides of length $s = ½$. Note: Expressions may or may not include parentheses. Nested grouping symbols are not included.	**Chapter 1 Number Sense, Addition, and Subtraction** 1-11 Evaluate Addition and Subtraction Expressions—pp. 54–55 **Chapter 2 Multiplication: Whole Numbers and Decimals** 2-5 Exponents—pp. 74–75 **Chapter 3 Division: Whole Numbers and Decimals** 3-11 Evaluate Multiplication and Division Expressions—pp. 108–109 **Chapter 4 Expressions and Equations** 4-1 Order of Operations—pp. 122–123 *4-1A Expressions—Online 4-2 Translate Expressions—pp. 124–12

NY-6.EE EQUATIONS AND EXPRESSIONS (INEQUALITIES)

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
NY-6.EE.3 Apply the properties of operations to generate equivalent expressions. e.g., Apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.	**Skills Update** Properties of Addition and Multiplication—p. 8 **Chapter 4 Expressions and Equations** 4-2 Translate Expressions—pp. 124–125 *4-3B Simplify Expressions—Online **Chapter 7 Fractions: Addition and Subtraction** 7-1 Addition Properties: Fractions—pp. 222–223 **Chapter 8 Fractions: Multiplication, Division, and Probability** 8-3 Properties of Multiplication—pp. 254–25
NY-6.EE.4 Identify when two expressions are equivalent. e.g., The expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y represents.	**Chapter 4 Expressions and Equations** *4-3A Equivalent Expressions—Online
Reason about and solve one-variable equations and inequalities.	
NY-6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	**Chapter 4 Expressions and Equations** 4-4 Equations and Inequalities—pp. 128–129 *4-4A Inequalities—Online
NY-6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem. Understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	**Chapter 1 Number Sense, Addition, and Subtraction** 1-10 Addition and Subtraction Expressions—pp. 52–53 1-11 Evaluate Addition and Subtraction Expressions—pp. 54–55 **Chapter 3 Division: Whole Numbers and Decimals** 3-10 Multiplication and Division Expressions—pp. 106–107 3-11 Evaluate Multiplication and Division Expressions—pp. 108–109 *continued*

NY-6.EE EQUATIONS AND EXPRESSIONS (INEQUALITIES)

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
	Chapter 4 Expressions and Equations *4-1A Expressions—Online 4-2 Translate Expressions—pp. 124–125 4-3 Evaluate Algebraic Expressions—pp. 126–127 *4-3A Equivalent Expressions—Online *4-3B Simplify Expressions—Online 4-5 Addition Equations—pp. 130–131 4-6 Subtraction Equations—pp. 132–133 4-7 Multiplication and Division Equations—pp. 134–135 4-10 Problem Solving Strategy: Use More Than One Step—pp. 140–141 **Chapter 7 Fractions: Addition and Subtraction** 7-8 Addition and Subtraction Expressions with Fractions—pp. 236–237 **Chapter 8 Fractions: Multiplication, Division, and Probability** 8-12 Multiplication and Division Equations with Fractions—pp. 272–273
NY-6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$; $x - p = q$; $px = q$; and $x/p = q$ for cases in which p, q and x are all nonnegative rational. Note: For the $\frac{x}{p} = q$ case, $p \neq 0$.	**Chapter 1 Number Sense, Addition, and Subtraction** 1-12 Problem Solving Strategy: Write an Equation—pp. 56–57 **Chapter 4 Expressions and Equations** 4-5 Addition Equations—pp. 130–131 4-6 Subtraction Equations—pp. 132–133 4-7 Multiplication and Division Equations—pp. 134–135 *4-7A Write an Equation—Online 4-10 Problem Solving Strategy: Use More Than One Step—pp. 140–141 **Chapter 7 Fractions: Addition and Subtraction** 7-9 Addition and Subtraction Equations with Fractions—pp. 238–239 *continued*

NY-6.EE EQUATIONS AND EXPRESSIONS (INEQUALITIES)

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
	Chapter 8 Fractions: Multiplication, Division, and Probability 8-12 Multiplication and Division Equations with Fractions—pp. 272–273
NY-6.EE.8 Write an inequality of the form $x > c$, $x \geq c$, $x \leq c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of these forms have infinitely many solutions; represent solutions of such inequalities on a number line.	**Chapter 4 Expressions and Equations** *4-4A Inequalities—Online *4-4B Write Inequalities—Online
Represent and analyze quantitative relationships between dependent and independent variables.	
NY-6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another. Given a verbal context and an equation, identify the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. e.g., In a problem involving motion at constant speed, list and graph ordered pairs of distances and times. e.g., Given the equation $d = 65t$ to represent the relationship between distance and time, identify t as the independent variable and d as the dependent variable.	**Chapter 14 More Concepts in Algebra** *14-4A Independent and Dependent Variables—Online *14-8A Related Variables—Online

NY-6.G GEOMETRY

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
Solve real-world and mathematical problems involving area, surface area and volume.	
NY-6.G.1 Find area of triangles, trapezoids, and other polygons by composing into rectangles or decomposing into triangles and quadrilaterals. Apply these techniques in the context of solving real-world and mathematical problems. Note: The inclusive definition of a trapezoid will be utilized, which defines a trapezoid as "A quadrilateral with at least one pair of parallel sides." (This definition includes parallelograms.)	**Skills Update** Perimeter and Area of Rectangles—p. 25 **Chapter 13 Measurement** 13-9 Area of Rectangles and Squares—pp. 464–465 13-10 Area of Triangles and Parallelograms—pp. 466–467 13-11 Area of Trapezoids—pp. 468–469 *13-11A Plane Figures and Area—Online
NY-6.G.2 Find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	**Chapter 13 Measurement** 13-16 Volume of Prisms—pp. 478–479 *13-16A Use Partial Cubes to Find Volume—Online *13-16B Volume of a Prism—Online
NY-6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices. Use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	**Chapter 14 More Concepts in Algebra** 14-5 Graph Ordered Pairs—pp. 504–505 *14-5B Graphing Polygons—Online 14-6 Graph Reflections and Translations—pp. 506–507 14-7 Graph Rotations—pp. 508–509
NY-6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. Note: Three-dimensional figures include only right rectangular prisms, right rectangular pyramids, and right triangular prisms. When finding surface areas, all necessary measurements will be given.	**Chapter 10 Geometry** 10-17 Solid Figures—pp. 362–363 **Chapter 13 Measurement** *13-13A Use Nets to Find Surface Area—Online 13-14 Surface Area of Cubes, Rectangular Prisms, and Cylinders—pp. 474–475 13-15 Surface Area of Pyramids and Triangular Prisms—pp. 476–477 **Blackline Masters** Nets—TE p. T54

NY-6.G GEOMETRY

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
NY-6.G.5 Use area and volume models to explain perfect squares and perfect cubes.	**Chapter 2 Multiplication: Whole Numbers and Decimals** Enrichment: Square Roots (perfect squares)—p. 83 *See also Grade 8* **Chapter 12 Three-Dimensional Geometry** *12-5A Perfect Cubes and Cube Roots—Online

NY-6.SP STATISTICS AND PROBABILITY

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
Develop an understanding of statistical variability.	
NY-6.SP.1	
NY-6.SP.1a Recognize that a statistical question is one that anticipates variability in the data related to the question and accounts for it in the answers. e.g., "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.	**Chapter 9 Data and Statistics** *9-6A Statistical Characteristics of a Data Set—Online
NY-6.SP.1b Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Note: Students need to understand that data are generated with respect to particular contexts or situations and can be used to answer questions about those contexts or situations.	**Chapter 9 Data and Statistics** 9-1 Surveys—pp. 292–293 9-2 Samples—pp. 294–295

NY-6.SP STATISTICS AND PROBABILITY

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
NY-6.SP.1c Understand that the method and sample size used to collect data for a particular question is intended to reduce the difference between a population and a sample taken from the population so valid inferences can be drawn about the population. Generate multiple samples (or simulated samples) of the same size to recognize the variation in estimates or predictions. Note: Examples of acceptable methods to obtain a representative sample from a population include, but are not limited to, a simple random sample for a given population or a systematic random sample for an unknown population. Examples of unacceptable methods of sampling include, but are not limited to, online polls and convenience	**Chapter 9 Data and Statistics** 9-1 Surveys—pp. 292–293 9-2 Samples—pp. 294–295 9-3 Bias in Surveys—pp. 296–297 9-4 Record and Interpret Data—pp. 298–299
NY-6.SP.2 Understand that a set of quantitative data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. Notes: • Students need to determine and justify the most appropriate graph to display a given set of data (histogram, dot plot). • Students extend their knowledge of symmetric shapes, to describe data displayed in dot plots and histograms in terms of symmetry. They identify clusters, peaks and gaps, recognizing common shapes and patterns in these displays of data distributions, and ask why a distribution takes on	**Chapter 9 Data and Statistics** *9-3A Summarize the Data—Online 9-6 Analyze Data—pp. 302–303 9-7 Box-and-Whisker Plots—pp. 304–305 *9-7A Describe Data—Online 9-8 Stem-and-Leaf Plots—pp. 306–307 9-9 Line Graphs—pp. 308–309 9-10 Double Line Graphs—pp. 310–311 9-11 Double Bar Graphs—pp. 312–313 9-12 Misleading Graphs and Statistics—pp. 314–315 9-13 Histograms—pp. 316–31
NY-6.SP.3 Recognize that a measure of center for a quantitative data set summarizes all of its values with a single number while a measure of variation describes how its values vary with a single number. Note: Measures of center are mean, median, and mode. The measure of variation is the range.	**Chapter 9 Data and Statistics** 9-5 Apply Measures of Central Tendency and Range—pp. 300–301 9-6 Analyze Data—pp. 302–303 *9-6B Choosing the Best Measures to Describe Data—Online *9-7A Describe Data—Online

NY-6.SP STATISTICS AND PROBABILITY

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
Summarize and describe distributions.	
NY-6.SP.4 Display quantitative data in plots on a number line, including dot plots and histograms.	**Chapter 9 Data and Statistics** 9-6 Analyze Data—pp. 302–303 *9-6A Statistical Characteristics of a Data Set—Online 9-7 Box-and-Whisker Plots—pp. 304–305 *9-7A Describe Data—Online 9-13 Histograms—pp. 316–31
NY-6.SP.5 Summarize quantitative data sets in relation to their context.	
NY-6.SP.5a Report the number of observations.	**Chapter 9 Data and Statistics** *9-3A Summarize the Data—Online 9-4 Record and Interpret Data—pp. 298–299 *9-7A Describe Data—Online
NY-6.SP.5b Describe the nature of the attribute under investigation, including how it was measured and its units of measurement.	**Chapter 9 Data and Statistics** *9-3A Summarize the Data—Online *9-7A Describe Data—Online
NY-6.SP.5c Calculate range and measures of center, as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. Note: Measures of center are mean, median, and mode. The measure of variation is the range. Role of outliers should be discussed, but no formula required.	**Chapter 9 Data and Statistics** 9-5 Apply Measures of Central Tendency and Range—pp. 300–301 9-6 Analyze Data—pp. 302–303 *9-6B Choosing the Best Measures to Describe Data—Online 9-7 Box-and-Whisker Plots—pp. 304–305 *9-7A Describe Data—Online 9-8 Stem-and-Leaf Plots—pp. 306–307 9-9 Line Graphs—pp. 308–309
NY-6.SP.5d Relate the range and the choice of measures of center to the shape of the data distribution and the context in which the data were gathered. Note: Measures of center are mean, median, and mode. The measure of variation is the range.	**Chapter 9 Data and Statistics** *9-6B Choosing the Best Measures to Describe Data—Online

NY-6.SP STATISTICS AND PROBABILITY

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
Investigate chance processes and develop, use and evaluate probability models.	
NY-6.SP.6 Understand that the probability of a chance event is a number between 0 and 1 inclusive, that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	**Chapter 8 Fractions: Multiplication, Division, and Probability** 8-13 Probability—pp. 274–275 8-14 Compound Events—pp. 276–277 8-15 Permutations and Combinations—pp. 278–279 8-16 Predictions and Probability—pp. 280–281
NY-6.SP.7 Approximate the probability of a simple event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. e.g., When rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. Note: Compound events are introduced in grade 7.	**Chapter 8 Fractions: Multiplication, Division, and Probability** 8-13 Probability—pp. 274–275 8-16 Predictions and Probability—pp. 280–281
NY-6.SP.8 Develop a probability model and use it to find probabilities of simple events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	
NY-6.SP.8a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of simple events. e.g., The probability of rolling a six-sided fair number cube and landing on a 2 is $\frac{1}{6}$. The probability of landing on an even number is $\frac{3}{6}$.	**Chapter 8 Fractions: Multiplication, Division, and Probability** 8-13 Probability—pp. 274–275 8-16 Predictions and Probability—pp. 280–281

NY-6.SP STATISTICS AND PROBABILITY

Grade 6 Content Standards	*Progress in Mathematics*, Grade 6
NY-6.SP.8b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. e.g., Find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	**Chapter 8 Fractions: Multiplication, Division, and Probability** 8-13 Probability—pp. 274–275 8-16 Predictions and Probability—pp. 280–281